



# IECEX Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: **IECEX KEM 10.0043X**

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Certificate history:

Status: **Current**

Issue No: 11

Issue 10 (2022-02-16)

Issue 9 (2020-10-16)

Issue 8 (2019-05-21)

Issue 7 (2018-01-24)

Issue 6 (2017-08-17)

Issue 5 (2015-10-30)

Issue 4 (2013-11-15)

Issue 3 (2013-04-15)

Issue 2 (2012-03-28)

Issue 1 (2011-02-17)

Date of Issue: 2023-08-23

Applicant: **Endress+Hauser SE+Co. KG**  
Hauptstrasse 1  
79689 Maulburg  
Germany

Equipment: **Level Transmitter Levelflex FMP5x**

Optional accessory:

Type of Protection: **Ex d, Ex e, Ex i, Ex t**

Marking: Ex ec IIC T6...T1 Gc

Ex ia IIC T6...T1 Ga

Ex ia IIC T6...T1 Ga/Gb

Ex ia/db [ia Ga] IIC T6...T1 Ga/Gb

Ex ic IIC T6...T1 Gc

Ex ta IIIC T<sub>200</sub> xx °C Da

Ex ta/tb IIIC Txx °C Da/Db

Ex ia IIIC Txx °C Da/Db

Approved for issue on behalf of the IECEx  
Certification Body:

**R. Schuller**

Position:

**Certification Manager**

Signature:  
(for printed version)

Date:  
(for printed version)

2023-08-23

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Certificate issued by:

**DEKRA Certification B.V.**  
Meander 1051  
6825 MJ Arnhem  
Netherlands





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Manufacturer: **Endress+Hauser SE+Co. KG**  
Hauptstrasse 1  
79689 Maulburg  
Germany

Manufacturing locations: **Endress+Hauser SE+Co. KG**  
Hauptstrasse 1  
79689 Maulburg  
Germany

**Endress+Hauser (USA) Automation Instrumentation Inc.**  
2340 Endress Place  
Greenwood , Indiana 46143  
United States of America

**Endress+Hauser (India) Automation Instrumentation Pvt. Ltd.**  
M-192, Waluj MIDC  
Maharashtra State  
Aurangabad 431136  
India

## See following pages for more locations

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEX Quality system requirements. This certificate is granted subject to the conditions as set out in IECEX Scheme Rules, IECEX 02 and Operational Documents as amended

### STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

- [IEC 60079-0:2017](#) Edition:7.0 Explosive atmospheres - Part 0: Equipment - General requirements
- [IEC 60079-1:2014](#) Edition:7.0 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
- [IEC 60079-11:2011](#) Edition:6.0 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
- [IEC 60079-26:2021](#) Edition:4.0 Explosive atmospheres - Part 26: Equipment with Separation Elements or combined Levels of Protection
- [IEC 60079-31:2013](#) Edition:2 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
- [IEC 60079-7:2017](#) Edition:5.1 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

### TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[NL/KEM/ExTR10.0055/12](#)

Quality Assessment Report:

[DE/TUN/QAR06.0003/10](#)



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## **EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

### **Description**

Level Transmitters Levelflex Type FMP50, Type OFMP50, Type FMP51, Type OFMP51, Type FMP52, Type OFMP52, Type FMP53, Type OFMP53, Type FMP54, Type OFMP54, Type FMP55, Type OFMP55, Type FMP56, Type OFMP56, Type FMP57 and Type OFMP57 are used for the measurement of the level of liquid or solid materials on basis of the Time of Flight (ToF) method.

Level Transmitters Levelflex FMP55 and OFMP55 additionally measure the interlayer between two different liquids by additionally using the capacitance of the probe.

The transmitter consists of an electronics enclosure and an integral rope or rod probe.

Depending on the applied interface, the sensor measurement signal is converted into an electrical output signal. See Annex 1 for detailed information on all possible variations and options and the electrical data.

Ambient temperature range -50 °C to +80 °C.

See Annex 1 for detailed information on the relation between ambient temperature and process temperature and temperature class and maximum surface temperature.

### **SPECIFIC CONDITIONS OF USE: YES as shown below:**

Depending on the configuration and the application of the equipment, conditions of certification may apply, e.g. regarding electrostatic discharge, zone partition wall or external protective devices. For details refer to the equipment specific Safety Instructions.



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**DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)**

1. Assessed per IEC 60079-26 Ed. 4.0
2. Changes to the construction and model codes



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Additional manufacturing locations:

**Endress+Hauser Yamanashi Co. Ltd.**  
862-1 Mitsukunugi  
Sakaigawa-cho  
Fuefuki-shi  
Yamanashi 406-0846  
**Japan**

**Endress+Hauser (Suzhou) Automation  
Instrumentation Co. Ltd.**  
China – Singapore Industrial Park (SIP)  
Su-Hong-Zhong-Lu, No. 491  
Jiangsu Province, 215021 Suzhou  
**China**

**Endress+Hauser (Brasil) Instrumentação e  
Aut.Ltda.**  
Estrada Municipal Antonio Sesti  
600 Bairro Recreio Costa Verde  
Itatiba, SP - 13254-085  
**Brazil**

**Endress+Hauser SE+Co. KG**  
Quermathe 2  
Stahnsdorf 14532  
**Germany**

**Annex:**

[227466000-Annex.pdf](#)

### Equipment

Guided Radar Level Transmitters Levelflex FMP5x and OFMP5x, for the measurement of the level of liquid or solid materials on basis of the Time of Flight (ToF) method.

### Type designation

Levelflex, code FMP5x-aabcdeffgghh\*\*+# and OFMP5x-aabcdeffgghh\*\*+#

x	=	Probe type			
			0, 1, 2, 3, 4, 5, 6 or 7		
aa	=	Approval code			
		IECEX	ATEX	ATEX	IECEX / ATEX
		IA, KA, *A	BA	= II 1 G	Ex ia IIC T6...T1 Ga
		8B	8B	= II 1 G	Ex ia IIC T6...T1 Ga
		IB, KB, *B	BB	= II 1/2 G	Ex ia IIC T6...T1 Ga/Gb
		8C	8C	= II 1/2 G	Ex ia IIC T6...T1 Ga/Gb
		IC, KC, *C	BC	= II 1/2 G	Ex ia/db [ia Ga] IIC T6...T1 Ga/Gb
		IG, KG, *G		=	Ex ec IIC T6...T1 Gc <sup>1)</sup>
		IH, KH, *H		=	Ex ic IIC T6...T1 Gc <sup>1)</sup>
		I2, K2, *2	B2	= II 1/2 G	Ex ia IIC T6...T1 Ga/Gb
				II 1/2 D	Ex ia IIIC Txx °C Da/Db
		I3, K3, *3	B3	= II 1/2 G	Ex ia/db [ia Ga] IIC T6...T1 Ga/Gb
				II 1/2 D	Ex ta/tb IIIC Txx °C Da/Db <sup>1)</sup>
		I4, K4, *4	B4	= II 1/2 G	Ex ia IIC T6...T1 Ga/Gb,
					Ex ia/db [ia Ga] IIC T6...T1 Ga/Gb <sup>2)</sup>
		IE, KE, *E	BE	= II 1 D	Ex ta IIIC T <sub>200</sub> xx °C Da <sup>1)</sup>
		IF, KF, *F	BF	= II 1/2 D	Ex ta/tb IIIC Txx °C Da/Db <sup>1)</sup>
b	=	I/O - interface			
		A	=	2-wire; 4 - 20 mA HART	
		B	=	2-wire; 4 - 20 mA HART + PFS (status output)	
		C	=	2-wire; 4 - 20 mA HART + 4 - 20 mA	
		E	=	2-wire; Foundation fieldbus, PFS (status output)	
		G	=	2-wire; Profibus PA, PFS (status output)	
		K <sup>3)</sup>	=	4-wire; 90 - 253 Vac, 4 - 20 mA HART	
		L <sup>3)</sup>	=	4-wire; 10.4 - 48 Vdc, 4 - 20 mA HART	
		Y	=	Special version, not safety relevant	
c	=	Display, operation			
		A	=	No display	
		C, E	=	Internal display	
		L, M, N	=	Provision for connection of external display	
		Y	=	Special version, not safety relevant	
d	=	Enclosure			
				any single number or letter	
e	=	Cable gland			
				any single number or letter	
ff	=	Probe specification			
				any double numbers or letters.	
gg	=	Seal			
				any double numbers or letters	
hhh	=	Process connection			
				any triple numbers or letters	
**+#	=	Options + additional options, not relevant for safety			
				any combination of numbers and letters, except JN and/or NF, as listed below:	
				Test, Certificate	
		JN		Ambient temperature transmitter -50 °C	
				Accessory Mounted	
		NF		Bluetooth	

Notes to Type Designation table:

NOTE 1:

Marking for versions of transmitters with option c = L or M or N

approval code aa =	IECEX	ATEX	ATEX	IECEX / ATEX
	IE, KE, *E	BE	II 1 D	Ex ta [ia Da] IIIC T <sub>200</sub> xx °C Da
	IF, KF, *F	BF	II 1/2 D	Ex ta/tb [ia Da] IIIC Txx °C Da/Db
	IG, KG, *G			Ex ec [ia Ga] IIC T6...T1 Gc <sup>a)</sup>
	IH, KH, *H			Ex ic [ia Ga] IIC T6...T1 Gc <sup>b)</sup>
	I3, K3, *3	B3	II 1/2 G	Ex ia/db [ia Ga] IIC T6 Ga/Gb
			II 1/2 D	Ex ta/tb [ia Da] IIIC Txx °C Da/Db

a) only with option b = B, C, E, G, K or L

b) only with option b = B, C, E or G

NOTE 2:

Multiple marking; type of protection selected at first installation must be indicated and may not be changed.

NOTE 3:

Pos 3 (I/O - interface) options L and K are excluded for approval code IE and BE.

NOTE 4:

Properties described in the documentation on IECEX approval codes apply to the same extent to the corresponding K\* approval code.

**Thermal data**

Ambient temperature at the electronics enclosure -50 °C to +80 °C.

The process temperature range, depending on the probe specifications and the relation between ambient temperature, process temperature and temperature class and maximum surface temperature T respectively T<sub>200</sub> for the different models of Level Transmitters Levelflex FMP5x and OFMP5x is listed in the safety instructions, provided with the equipment.

Where EPL Da is involved but no dust layer depth (e.g. T<sub>200</sub>) is indicated, this is to be understood that only the probe may be installed in an area requiring EPL Da.

That part may be installed in any dust layer depth because no significant heating can occur here.

**Electrical data**

I/O Interface

The codes of the type(s) of protection in the following table only relate to the electrical data of the I/O Interface and may differ from the codes as listed for the approval code in the Type Designation table.

Intrinsically safe versions					
Approval Code	I/O Interface		Type of protection	Electrical data/maximum values	
	Code	Mode (functional)		Supply/output (terminals 1 and 2)	Supply/output (terminals 3 and 4)
BA, BB, B2, IA, *A, IB, *B, I2, *2, 8B, 8C	A	4 ... 20 mA HART	Ex ia IIC/IIIC	$U_i = 30 \text{ V}; I_i = 300 \text{ mA}; P_i = 1 \text{ W}; C_i = 12 \text{ nF}; L_i = 0 \text{ mH}$	non-existent
IH, *H			Ex ic IIC	$U_i = 35 \text{ V}; I_i = \text{N/A } ^{1)}; P_i = \text{N/A}; C_i = 12 \text{ nF}; L_i = 0 \text{ mH}$	non-existent
For application / certificates which need IO-module with galvanic separation and use of 4...20mA HART in 1 channel mode (switch terminals closed) :					
B4, I4, *4	A	4 ... 20 mA HART	Ex ia IIC	$U_i = 30 \text{ V}; I_i = 300 \text{ mA}; P_i = 1 \text{ W}; C_i = 5 \text{ nF}; L_i = 0 \text{ mH}$	Not used
IH, *H			Ex ic IIC	$U_i = 35 \text{ V}; I_i = \text{N/A } ^{1)}; P_i = \text{N/A}; C_i = 5 \text{ nF}; L_i = 0 \text{ mH}$	Not used
BA, BB, B2, B4, IA, *A, IB, *B, I2, *2, I4, *4, 8B, 8C	B	4 ... 20 mA HART+ PFS	Ex ia IIC/IIIC	$U_i = 30 \text{ V}; I_i = 300 \text{ mA}; P_i = 1 \text{ W}; C_i = 5 \text{ nF}; L_i = 0 \text{ mH}$	$U_i = 30 \text{ V}; I_i = 300 \text{ mA}; P_i = 0.7 \text{ W}/0.85 \text{ W}/1 \text{ W } ^{2)}; C_i = 6 \text{ nF}; L_i = 0 \text{ mH}$
IH, *H			Ex ic IIC	$U_i = 35 \text{ V}; I_i = \text{N/A } ^{1)}; P_i = \text{N/A}; C_i = 5 \text{ nF}; L_i = 0 \text{ mH}$	$U_i = 35 \text{ V}; I_i = \text{N/A } ^{1)}; P_i = 0.7 \text{ W}/0.85 \text{ W}/1 \text{ W } ^{2)}; C_i = 6 \text{ nF}; L_i = 0 \text{ mH}$
BA, BB, B2, B4, IA, *A, IB, *B, I2, *2, I4, *4, 8B, 8C	C	4 ... 20 mA HART + 4 ... 20 mA	Ex ia IIC/IIIC	$U_i = 30 \text{ V}; I_i = 300 \text{ mA}; P_i = 1 \text{ W}; C_i = 30 \text{ nF}; L_i = 0 \text{ mH}$	$U_i = 30 \text{ V}; I_i = 300 \text{ mA}; P_i = 1 \text{ W}; C_i = 30 \text{ nF}; L_i = 0 \text{ mH}$
IH, *H			Ex ic IIC	$U_i = 30 \text{ V}; I_i = \text{N/A } ^{1)}; P_i = \text{N/A}; C_i = 30 \text{ nF}; L_i = 0 \text{ mH}$	$U_i = 30 \text{ V}; I_i = \text{N/A } ^{1)}; P_i = \text{N/A}; C_i = 30 \text{ nF}; L_i = 0 \text{ mH}$
BA, BB, B2, B4, IA, *A, IB, *B, I2, *2, I4, *4	G, E	Profibus PA + PFS Foundation Fieldbus + PFS	Ex ia IIC/IIIC	FISCO with $U_i = 17,5 \text{ V}; I_i = 550 \text{ mA}; P_i = 5,5 \text{ W}; C_i = 5 \text{ nF}; L_i = 10 \mu\text{H}$ or $U_i = 30 \text{ V}; I_i = 300 \text{ mA}; P_i = 1.2 \text{ W}; C_i = 5 \text{ nF}; L_i = 10 \mu\text{H}$	$U_i = 30 \text{ V}; I_i = 300 \text{ mA}; P_i = 1 \text{ W}; C_i = 6 \text{ nF}; L_i = 0 \text{ mH}$
IH, *H		Profibus PA + PFS Foundation Fieldbus + PFS	Ex ic IIC	FISCO with $U_i = 17,5 \text{ V}; I_i = \text{N/A } ^{1)}; P_i = \text{N/A}; C_i = 5 \text{ nF}; L_i = 10 \mu\text{H}$ or $U_i = 32 \text{ V}; I_i = \text{N/A } ^{1)}; P_i = \text{N/A}; C_i = 5 \text{ nF}; L_i = 10 \mu\text{H}$	$U_i = 35 \text{ V}; I_i = 300 \text{ mA}; P_i = 0.7 \text{ W}/0.85 \text{ W}/1 \text{ W } ^{2)}; C_i = 6 \text{ nF}; L_i = 0 \text{ mH}$



Non-intrinsically safe versions					
Approval Code	I/O Interface		Type of protection	Electrical data/maximum values	
	Code	Mode (functional)		Supply/output (terminals 1 and 2)	Supply/output (terminals 3 and 4)
BC, B3, B4, IC, *C, I3, *3, I4, *4	A	4 ... 20 mA HART	Ex db IIC	$U_N = 35 \text{ V}^{4)}$ $I_{\text{max}} = 22 \text{ mA}$ $P_N = 0.7 \text{ W}$ $U_m = 250 \text{ Vac}$	---
BE, IE, *E			Ex ta IIIC <sup>3)</sup>		
BF, B3, IF, *F, I3, *3			Ex tb IIIC <sup>3)</sup>		
IG, *G			Ex ec IIC		
BC, B3, B4, IC, *C, I3, *3, I4, *4	B	4 ... 20 mA HART+ PFS	Ex db IIC	$U_N = 35 \text{ V}^{4)}$ $I_{\text{max}} = 22 \text{ mA}$ $P_N = 0.7 \text{ W}$ $U_m = 250 \text{ Vac}$	$U_N = 35 \text{ V}^{4)}$ $P_N = 0.7 \text{ W}$ $U_m = 250 \text{ Vac}$
BE, IE, *E			Ex ta IIIC <sup>3)</sup>		
BF, B3, IF, *F, I3, *3			Ex tb IIIC <sup>3)</sup>		
IG, *G			Ex ec IIC		
BC, B3, B4, IC, *C, I3, *3, I4, *4	C	4 ... 20 mA HART + 4 ... 20 mA	Ex db IIC	$U_N = 10.4 \dots 30 \text{ V}^{4)}$ $I_{\text{max}} = 22 \text{ mA}$ $P_N = 0.7 \text{ W}$ $U_m = 250 \text{ Vac}$	$U_N = 10.4 \dots 30 \text{ V}^{4)}$ $I_{\text{max}} = 22 \text{ mA}$ $P_N = 0.7 \text{ W}$ $U_m = 250 \text{ Vac}$
BE, IE, *E			Ex ta IIIC <sup>3)</sup>		
BF, B3, IF, *F, I3, *3			Ex tb IIIC <sup>3)</sup>		
IG, *G			Ex ec IIC		
BC, B3, B4, IC, *C, I3, *3, I4, *4	G, E	Profibus PA + PFS Foundation Fieldbus + PFS	Ex db IIC	$U_N = 9 \dots 32 \text{ Vdc}^{4)}$ $P_N = 880 \text{ mW}$ $U_m = 250 \text{ Vac}$	$U_N = 10.4 \dots 35 \text{ V}^{4)}$ $P_N = 0.7 \text{ W}/0.85 \text{ W}/1 \text{ W}^{2)}$ $U_m = 250 \text{ Vac}$
BE, IE, *E			Ex ta IIIC <sup>3)</sup>		
BF, B3, IF, *F, I3, *3			Ex tb IIIC <sup>3)</sup>		
IG, *G			Ex ec IIC		
BC, B3, IC, *C, I3, *3	K	4-wire ac, 4 - 20 mA HART	Ex db IIC	$90 \dots 253 \text{ Vac}^{4)}$ 50/60 Hz $U_m = 250 \text{ Vac}$ $I_{\text{max}} = 160 \text{ mA};$ $P_N = 1540 \text{ mW}$	$U_N = 22 \text{ V}^{4)}$ $I_{\text{max}} = 22 \text{ mA}$ $U_m = 250 \text{ Vac}$
BF, B3, IF, *F, I3, *3			Ex tb IIIC <sup>3)</sup>		
IG, *G			Ex ec IIC		
BC, B3, IC, *C, I3, *3	L	4-wire dc, 4 - 20 mA HART	Ex db IIC	$10.4 \dots 48 \text{ Vdc}^{4)}$ $U_m = 250 \text{ Vac}$ $I_{\text{max}} = 300 \text{ mA};$ $P_N = 1328 \text{ mW}$	$U_N = 22 \text{ V}^{4)}$ $I_{\text{max}} = 22 \text{ mA}$ $U_m = 250 \text{ Vac}$
BF, B3, IF, *F, I3, *3			Ex tb IIIC <sup>3)</sup>		
IG, *G			Ex ec IIC		

Notes: 1) Current controlled output,  $I_N \leq 25 \text{ mA}$

2) Different values of  $P_i$  or  $P_N$  resulting in different surface temperature values (refer to thermal data)

3) if used as replacement for devices certified according to EN/IEC60079-31 ed. 1 or preceding standards the values stated applies for Ex ta, also.

4) specifies maximum value, which includes 10% safety margin for typical power line variations

Service connector, equivalent to connector X500 / service interface (CDI)

The type of protection of the service connector, which is intended for connection to Endress+Hauser Service Interface FXA291 or any other interface, depends on the Approval code of the equipment.

If used as interface in type of protection intrinsic safety Ex ia IIC/IIIC, the following maximum values apply:

$U_o = 7.3 \text{ V}$ ;  $I_o = 100 \text{ mA}$ ;  $P_o = 160 \text{ mW}$ ;  $U_i = 7.3 \text{ V}$ ;  $C_i = 0 \text{ nF}$ ;  $L_i = 0 \text{ mH}$ .

If used as non-intrinsically safe interface,  $U_N = 6.5 \text{ V}$

External display connector, equivalent to X900/X901 / interface for display

The type of protection of the external display connector depends on the Approval code of the equipment.

For transmitters prepared for connection of the external display of Endress+Hauser, Type FHX50, or any other suitable display in type of protection intrinsic safety Ex ia IIC/IIIC, the following maximum values apply:

$U_o = 7.3 \text{ V}$ ;  $I_o = 157 \text{ mA}$ ;  $P_o = 362 \text{ mW}$ ;  $C_o = 388 \text{ nF}$ ;  $L_o = 149 \text{ }\mu\text{H}$ ;

maximum allowed cable capacitance  $C_c = 125 \text{ nF}$ ; maximum allowed cable inductance  $L_c = 149 \text{ }\mu\text{H}$ .

In other cases, if used as interface in type of protection intrinsic safety Ex ia IIC/IIIC, the following maximum values apply:

$U_o = 7.3 \text{ V}$ ;  $I_o = 327 \text{ mA}$ ;  $P_o = 800 \text{ mW}$ ;  $U_i = 7.3 \text{ V}$ ;  $C_i = 0 \text{ nF}$ ;  $L_i = 0 \text{ mH}$ .

If used as non-intrinsically safe interface,  $U_N = 6.5 \text{ V}$ .